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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—6TH YEAR. SYDNEY: SATURDAY, MAY 10, 1919. No. 19.

TROPICAL AUSTRALIA AND ITS SETTLEMENT.

By A. Breinl and W. J. Young.

(From the Australian Institute of Tropical Medicine, Townsville.)

(Continued from page 359.)

Effects of Heat and Humidity on the Animal Organism.

In all warm-blooded animals the temperature of the body under normal physiological conditions only varies slightly. This temperature is maintained by two processes—heat production and heat loss. The former is brought about by chemical processes, the combustion of food material inside the body, the latter by physical means, namely, radiation and convection and evaporation of sweat. In the clothed human being the heat production plays a much less important part in regulation of temperature than the heat loss by physical means and it is evident that the extent to which these physical means operate, must depend on the surroundings. Whereas in a cold climate heat loss takes place mainly by radiation and convection from the body, in a hot climate, where the air temperature often approaches or even exceeds that of the body, the heat loss through radiation can only be very small or nil and heat is mainly lost by evaporation of sweat from the skin.

It was of great interest to inquire into the physiological reaction of the animal body to increased outer temperature and a great deal of experimental work has been done in this direction. Attention has been paid to the body temperature and the metabolism in conjunction with the calorific value of the food, but a great deal of this work has been carried out in temperate climates under artificial conditions and comparatively few observations have been made in the tropics.

(1) Regulation of Body Temperature Under Artificial Conditions.

Blagden and Fordyce (1775) noticed that their mouth temperatures did not rise above normal when remaining for fifteen minutes in a dry room heated to a temperature of 115° C. to 126.7° C., although the heat was sufficient to cook a beef steak. Exposure for the same length of time, however, in a moist room heated to 54.4° C. caused the body temperature to rise to 37.8° C.. In recent times Haldane (1905) carried out his classical experiments on the effect of humid heat. His observations were made on human beings, both at rest and at work, in an artificially heated chamber, as well as underground in deep mines, in still air or exposed to artificial draughts. He concluded that the temperature of the human organism exposed to humid heat begins to rise after a period varying according to the individual and the conditions and then continues to do so. The rise in body temperature corresponds with the reading of the wet bulb temperature and is practically independent of the dry bulb temperature. During rest in still air, wet bulb temperature of about 31.1° C. (88° F.) could be borne without any abnormal rise in rectal temperature, but when the thermometer rose above that temperature the rectal temperature immediately commenced to rise, which rise was accompanied by an increase in the pulse rate, profuse sweating and dyspnœa, until finally exhaustion set in. During muscular exercise in still air this increase in body temperature commenced at a much lower wet bulb (27° C., or 80.6° F.) and in moving air much higher wet bulb temperatures were required to produce the same effect.

These experiments were continued and amplified in Haldane's laboratory by Harvey Sutton (1908), who studied the changes in the gaseous metabolism of the body when exposed to humid heat. He observed a large increase in the metabolism, running parallel to the rise in body temperature; in fact, analogous conditions to those existent in fever. He concluded that "all experiments point to the fact that once the balance of the mechanism of heat regulation in the human body has been definitely upset by high external temperatures, combined with almost total abolition of heat loss in evaporation, a vicious circle is established. The internal temperature rises and as a result the oxidation processes—and therefore the production of heat also increases—so that the body temperature rises still further, and so on. Once the ball has been set rolling, nothing seems to check its progress, and it slowly but surely gathers speed. The rectal temperature not only continues to rise, while the external temperature still remains constant, but the rise gradually increases in rapidity as if momentum were being gathered."

Conditions similar to those under which the experiments of Haldane and Harvey Sutton were conducted, may, according to Pembrey (1913), give rise to heat stroke. He analysed the history of a large number of cases of heat stroke which had occurred amongst British troops in India, and came to the conclusion that heat stroke is brought about by a failure of the mechanism which regulates the body temperature, after prolonged exposure to excessive moist heat. In an excessively hot and moist atmosphere the cooling effect of the evaporating sweat is insufficient to prevent the body temperatures from rising, and a prolonged exposure to these unfavourable circumstances leads to a gradual rise in body temperature and ultimately to heat stroke.

Observations on the influence of wind and draughts on the body bring additional evidence to show that, with high external temperature, the loss of heat due to evaporation of sweat is the most important factor in regulating the body temperature. As far back as 1883 Herman suggested that the ill-effects due to bad ventilation and crowded rooms were caused by heat stagnation. This view was confirmed experimentally by Heyman, Paul and Ercklentz (1905) and later still by Hill, Flack, Rowlands and Walker (1913). Hill and his colleagues confined individuals in a small experimental chamber until the carbonic acid content rose from 1% to 1.5% in one instance and

from 3% to 4% in another. The subjects experienced discomfort at a wet bulb temperature of 27.7° to 28.4° C. (82° to 85° F.) and this discomfort was considerably allayed when the air in the chamber was moved by a fan. No relief, however, was experienced when fresh air was breathed through mouthpiece and tube passing through the wall of the chamber. Subjects outside the chamber who breathed the chamber air suffered no discomfort, thus proving that the discomfort was caused not by the increased carbon dioxide of the air in the chamber, but by the heat stagnation, following the failure of evaporation of sweat.

The part played by the evaporating perspiration is illustrated in Zuntz and Tendlau's observations upon the body temperature of a man whose skin was devoid of sweat glands. The exposure to the summer sun of a temperate climate caused his temperature to rise to 39° C. (102.2° F.) and a slight amount of manual work produced the same effect. He was, however, able to find a substitute for the missing function by frequently soaking his shirt in water.

Such a condition as described above can be artificially produced by immersion in a hot water bath, when the evaporation from the skin is prevented and the effects of perspiring are eliminated. Hill and Flack (1909) studied the pulse rate, blood pressure, body temperature, breathing volume and alveolar tensions of man in a hot bath. They found that immersion up to the neck in hot water (40.5° to 43.3° C., or 105° to 110° F.) for fifteen to thirty minutes caused an increase in the body temperature of 39.1° to 40.3° C. (102.5° to 104.6° F.). The pulse rate and respiration rate and volume rose and the blood pressure was lowered. In the alveolar air a notable fall in carbonic acid tension and a corresponding rise in oxygen tension were observed, caused by the washing-out effect of the increased breathing.

The foregoing observations make it clear that the main difference between temperature regulation in the tropics and in a temperate climate lies in the greater activity of the sweat glands, and the evaporation of the increased amount of sweat plays a more important part in the cooling of the body. It is a common experience in the tropics that the quantity of water secreted in the urine is greatly diminished during hot weather, in spite of the larger intake of fluid; the balance of the water leaving the body by way of the skin and the lungs is considerably larger.

The establishment of an equilibrium between the water secreted by the kidneys and that secreted by the sweat glands is probably of importance in the process of acclimatization. Inhabitants of the tropics know only too well the discomfort caused by the frequent necessity of micturition during a sudden cold spell, even at times when the temperature is well above that regarded as comfortable and even warm in a temperate climate. Moreover, the feeling of subjective discomfort on such occasions is very marked and this sensitiveness to cold has given rise to the popular belief that the blood of dwellers in the tropics is thinner than that of a person living in a temperate climate.

(2) Changes in the Physiology of the White Man Living Under Tropical Conditions.

The tradition that the white man cannot flourish in tropical climes has given rise to a great deal of controversy and the possibility of an acclimatization has constantly occupied the attention of authorities interested in the development of the tropics. It has been propounded by several observers with experience of life in tropical countries that, apart from diseases peculiar to the tropics, climate *per se* comprising heat, humidity and light make it impossible for a white race to settle and thrive. Attempts have therefore been made to study the physiology of the white man living in the tropics, in order to ascertain whether changes have actually taken place, and for comparison the investigations have been extended to native races. The results so far are by no means complete and a decided answer is still to seek.

Little reflection is needed to appreciate the difficulties which stand in the way of a practical solution of the question. Tropical diseases have up to recent times been very prevalent in most parts and have been a large factor in preventing settlement by a white race. The pioneer work of Manson and Ross on the rôle of insect carriers in such diseases as filaria and malaria has laid down new lines for the investigation of other tropical complaints. The practical application of the results has led to increased public health activities and has thus created a new era in the permanent settlement of the tropics by inhabitants of European descent. Moreover, the tropics, with only few exceptions, such as the South American Republics, have only recently been settled; a second and third generation is rare and it is impossible to obtain and select subjects in sufficient numbers for carrying out observations which would yield results which could not be attacked on the plea of insufficient time of observation. The conditions of life in general there, for example, housing, ventilation and food, are so different that the difficulty of obtaining figures suitable for a comparison of physiological functions is greatly increased and comparative standards in many respects are lacking.

A critical review of the literature on acclimatization brings to light the fact that nearly all observations have been made on Europeans who have resided in the tropics for a comparatively short time. The majority were men chosen for service in the tropics on account of their physical fitness and few of them could boast of an uninterrupted residence in the tropics for more than a few years at most.

As an example, in the work of the American observers in the Philippines, the figures relating to Europeans were obtained with male subjects only and furthermore cannot be accepted, excepting on the supposition that changes due to climatic influences become esablished within a comparatively short time. The same criticism may be applied to experiments on metabolism carried out by Eijkman in Java, whose subjects had resided in the tropics for from four and a half to fifteen years, and out of nineteen Europeans only one could show a continuous residence for fifteen years. Results such as those of Rattray, Wick, Schilling and many others are the outcome of observations on one or a few subjects only, collected during a flying visit to the tropics.

Investigations on aboriginal races, although interesting from a comparative point of view, do not help to solve the problem, on account of the different mode of living, customs and personal habits.

(*a*) *Body Temperature in the Tropics.*—The fact that the external temperature in the tropics is considerably higher than in a temperate climate suggested a raised body temperature. On account of the ease with which the body temperature can be taken, it is not surprising that the literature contains records of numerous observations, many collected during a sea voyage between Europe and the tropics, others on Europeans and native races living in the tropics.

John Davy, in 1839, published a number of observations made upon the mouth temperature of seven healthy men during a voyage from England to Ceylon, and he concluded that the temperature of a European increased whilst passing from a temperate to a warm climate and that, in addition, the body temperature of residents in the tropics is slightly raised above normal. He amplified his work during a residence of three years in Barbados and stated that his own temperature was higher by 0.5° C. (0.9° F.) when compared with his body temperature in England. Many others, including Reynaud and Blossville, Rattray, Brown-Séquard, Jousset, Maurel and others (referred to by Pembrey, 1898) confirmed this slight rise (less than 0.55° C., or 1° F.), which was more pronounced during the first few weeks of residence in the torrid zone, that is, during the time of acclimatization. Crombie (see Pembrey, 1898) recorded the results of 1,288 observations upon his own mouth temperature in Bengal and found it slightly higher (namely, 0.23° C., or 0.7° F.) than in England. Neuhauss (1893), who, during a voyage round the world, observed his own rectal temperatures, found the following differences (see Table II.).

TABLE II.

Temperature of Air.	6 a.m.	12 noon.	10 p.m.	6 p.m.	Remarks.
Temperate Zone.					
Minimum. Maximum.					
11.5° C. 19.1° C.	36.6° C.	36.9° C.	36.7° C.	37.1° C.	Temperate in rectum } Mean of 20 days
(51.7° F.) (56.5° F.)	(97.9° F.)	(98.5° F.)	(98.2° F.)	(98.8° F.)	
	55	55	56	62	Pulse
Tropical Zone.					
Minimum. Maximum.					
28.8° C. 26.6° C.	36.9° C.	37.3° C.	37.1° C.	37.3° C.	Temperate in rectum } Mean of 20 days
(75.0° F.) (79.9° F.)	(98.5° F.)	(99.2° F.)	(98.8° F.)	(99.2° F.)	
	60	68	64	72	Pulse

On the other hand, many observers have denied that there is any marked difference in the body temperature; amongst others were Thornly (1878) and Furnell (1878) and more recently Wick (1910), who could not observe any alteration in his body temperature during the passage from a temperate zone to the tropics.

Chamberlain (1911), as the result of 3,000 mouth temperatures, taken at quarterly intervals upon 600 healthy American soldiers living in the Philippines, arrived at a similar conclusion. According to him, the temperature of American soldiers doing duty in the Philippines showed no appreciable variation for season or for complexion type; it averaged 37° C. (98.7° F.) and this average differed little, if at all, from the mean normal temperature for white men living in the United States. In Plehn's (1898) opinion there is a slight rise in temperature during acclimatization, but after continued residence this rise disappears.

The body temperature of dark-skinned native races in the tropics does not differ appreciably from that of Europeans. A. Jousset (1884) found that the average temperature of Hindoos, Chinese and negroes were 37.8° C. (100° F.), whereas that of Europeans under similar conditions was 37.87° C. (100.1° F.). Eijkman (1895) in Batavia compared the axillary temperature of Malays and Europeans and found that the Malays had a slightly lower temperature (36.85° C., or 98.3° F.) when compared with Europeans (37° C., or 99° F.).

Young (1915) in a recent paper on this subject recorded a number of observations taken during the hot season in North Queensland. He pointed out that it is fallacious to speak of a normal mean body temperature, as that of a healthy person, even at rest in a cool climate, varies considerably during the twenty-four hours,[2] and considered it more rational to employ as standard the range of body temperature which has been observed in healthy individuals. He concluded that:—

> 1. The temperature of the mouth of Europeans living in the tropics is often considerably lower than that of the rectum and that this difference is generally much more marked after exercise, just as in temperate climates. The temperature of the mouth is thus not reliable as a measure of the body temperature.
> 2. During complete rest the rectal temperature did not show any marked variations from the limits of temperature observed in Europe.
> 3. A considerable rise in the rectal temperature was produced by slight muscular work and this was usually maintained for some time after the work had ceased.

These observations make it clear that the discrepancies in the records quoted above are in all probability partly due to the mode in which the temperatures were taken and partly to individual and daily variations.

At rest the body temperature in the tropics does not vary from that in a temperate climate, but with exercise the temperature rises more quickly and subsequently decreases more slowly than in a temperate zone. A good example of this is quoted by Young in respect to one of his subjects, who was in the habit of taking exercise in the early morning; during a period of eighteen days his average rectal temperature at 8 a.m. was 37.9° C. (100.3° F.). On three occasions

[2] Benedict and Carpenter (Carnegie Institution monographs, No. 126, 1910), writing on this subject, state that "the idea of constancy in body temperature has become so generally accepted that it is commonly believed that the body remains at the temperature of 98.6° F. or 37° C. without material change, other than that produced by disease. This impression is so firmly fixed that one finds to-day on all clinical thermometers a special mark opposite this temperature, to indicate what is supposed to be the normal temperature. It is somewhat difficult to place the exact history of this mark being selected, and it may be looked upon as more or less of a thermometric fetish, which has been worshipped by long-continued usage."

on which the exercise was omitted the rectal temperature at the same time was only 37.5° (99.6° F.).

(b) Rate of Respiration.—A comparison of the respiration rate of tropical inhabitants with that found in Europe has yielded conflicting evidence. According to Rattray (1870) the total volume of air expired was about 7% less than in a temperate climate, and he attributed this to a decreased rate of respiration, since spirometer measurements showed that the lung capacity was increased. These observations, made on a small number of subjects, were not confirmed by Jousset and by Plehn, who, on the contrary, found an increase in the respiration rate. Chamberlain (1911) made observations on 608 American soldiers in the Philippines. He found the average to be 19.3, which is much higher than the figure usually accepted as normal for Europeans in Europe, namely, 17 to 18. It may be mentioned here that Osborne (1910) carried out observations during the summer months in Victoria (Australia), and found that with a high outer temperature (37.7° C., or 100° F.) the pulmonary ventilation was increased.

In consideration of the fact that the human body loses a certain amount of water in the expired air and consequently heat due to the evaporation of the water, it might be expected that the body would make use of this means for cooling purposes and an increased respiration would be the outcome.

(c) Blood Pressure.—Estimations of the blood pressure in the tropics have been made by a number of observers with contradictory results. Musgrave and Sisson (1910) in Manila examined 97 Americans, 10 sisters of charity and 40 Filipinos. They graded the former two groups according to their length of tropical residence and found a decided decrease in the blood pressure, corresponding to the length of residence in a hot climate and suggested that the lower blood pressure might be due to a lowered peripheral resistance, brought about either by a decrease in the vasomotor tone or by splanchnic influences. Chamberlain (1911) took the blood pressure of 992 American soldiers in the Philippines and made 5,368 observations and concluded that "the average blood pressure of 115 to 118 millimetres found in these large bodies of men differed little, if any, from the accepted standard among males of the same age in a temperate zone when the five inch armlet is used."

Breinl and Priestley (1914) estimated the blood pressure of North Queensland school children and concluded from 573 observations that the climate as such has no marked influence on the blood pressure in children.

Theoretically a permanent change in the blood pressure in the tropics should not be anticipated, as a sound heart and sound arteries are adaptable to any change. Only temporary variations are observed, such as a rise in blood pressure on exertion or a lowering due to venous hyperæmia of the skin, similar to that produced by a hot bath, but both would only be evanescent and not peculiar to tropical life.

(d) Blood Conditions of Europeans in the Tropics.—The existence of tropical anæmia has for a long time been regarded as an established fact and most of the early text-books on tropical medicine speak of an anæmia due to climatic influences only. There is no doubt that the greater proportion of the cases in the time before microscopical examination became general were in all probability caused by malaria and hookworm (anchylostomiasis). The skin of the healthy European inhabiting a tropical climate appears to the newcomer pale and sallow, the degree of the sallowness depending on many factors, especially complexion and skin texture. The unprotected skin of individuals with red or fair hair is invariably more sallow and appears more anæmic for the same reason that it has, on account of the lack of pigment, a lesser defensive power against the action of the sun's rays. The paleness of the skin has naturally given rise to the conception that there exists a tropical anæmia and that "thinness and poorness" of blood is a natural sequence of prolonged residence in the tropics. It is not unexpected that the advent of accurate microscopical methods has led to an investigation of blood conditions of Europeans in the tropics and the results of these investigations have been rather surprising.

Marestang (1889), van der Scheer (1890) and Eijkman (1891) examined the blood of Europeans living in the Dutch East Indies without finding any marked differences when compared with figures obtained for Europe. Glogner (1892) in Sumatra and Plehn (1892) in the Cameroons carried out similar investigations with identical results. These observations, however, are not entirely conclusive, since they were based on a comparatively small number of estimations.

Work of a similar nature was carried out by the Americans in the Philippines. Wickline (1908) examined the blood of about 70 American soldiers, after a varying period of residence in the Philippines. The first examination was made three months after their arrival; it was repeated after the lapse of three months and twice again after an interval of approximately eight months. He discovered a gradual decrease in the amount of hæmoglobin from 9.7 to 8.3 and a regular rise in the number of erythrocytes from 4.9 to 5.3 millions. Chamberlain (1911), following up Wickline's work, performed 1,718 red cell counts and 1,433 hæmoglobin estimations on 702 soldiers and concluded that "the red cell counts, averaging 5.2 millions, rarely falling below 4.5, do not differ from the normal at present recognized for healthy young men in a temperate zone." The hæmoglobin figures are perhaps a little low, but not sufficient to indicate a definite anæmia.

Cuthbert (1911) collected similar observations from 21 healthy soldiers of European descent on the West Coast of Africa with a similar result. Wickline's and Chamberlain's figures were obtained from healthy subjects, especially chosen for tropical service, and after a comparatively short residence in the tropics (two years) and are open to the objections already mentioned.

Breinl and Priestley (1914) made observations on apparently healthy school children in North Queensland of ages ranging between seven and fifteen years, most of whom were born and had lived all their life in North Queensland. Five hundred and eight blood counts were performed on 305 boys and 269 girls and the hæmoglobin content of the blood was estimated by the Fleischl-Miescher method.

They concluded from their investigations that there is no striking difference in the number of erythro-

cytes and the colour index in North Queensland children when compared with averages obtained in children of a temperature climate. The number of white blood corpuscles (leucocytes), according to Chamberlain (1911), also to Breinl and Priestley (1914), is slightly higher when compared with that generally accepted as the standard for a temperate climate.

Differential counts, which estimate the percentage of the various types of leucocytes, showed, according to these observers, a distinct alteration. The proportion of the polymorphonuclear neutrophile leucocytes appeared to be decreased to 56.1% (Chamberlain and Vedder, 1911) and 56.8% (Breinl and Priestley); 65% to 70% is generally accepted as average. The percentage of the eosinophile leucocytes was distinctly increased.

Chamberlain and Vedder (1911) studied the blood conditions of American soldiers and natives in the Philippines and came to the conclusion that the Arneth blood picture of the soldiers showed a slight "shift to the left," that of the Filipinos a much more marked shift, which means that the nuclear condition of the polymorphonuclear neutrophile leucocytes in respect to the numbers of nuclear fragments was altered when compared with those of healthy Europeans living in a temperate climate; the number of cells with a smaller number of fragments (one to two) was considerably increased. Breinl and Priestley (1914) carried out analogous observations on North Queensland school children and found that similar conditions prevailed and that the blood picture resembled closely that of the Filipinos. The authors concluded that the "shift to the left" was due to the effect of a tropical climate upon the white race living in the tropics.

For comparison a number of Arneth counts on apparently healthy native children in the Northern Territory were performed and their "Arneth index" corresponded closely to that of North Queensland school children.

The significance of the altered Arneth index is uncertain and, according to Breinl and Priestley (1914), the presence of a large number of neutrophile leucocytes belonging to class one (possessing a single nucleus) "indicates a greater activity of the bone marrow, but does not necessarily imply that the resistance of the organism is lowered" (to disease) "in any way."

A few observations on the specific gravity of blood were made by Eijkman (1896) in Java and by Breinl and Priestley (unpublished) in Townsville. The results did not show any marked deviation from the average specific gravity of the blood considered normal for a temperate climate, and, when considered in conjunction with the previously mentioned blood work, proves that there is in general no evidence of an anæmia in the tropics due to climatic influences only. The popular belief of the "thinness of the blood" after prolonged residence in the tropics is, apart from anæmia due to disease, from a scientific point of view only a myth.

(e) Metabolism in the Tropics.—In a cold climate, as has been stated previously, the temperature equilibrium of man is maintained mainly by regulation of the heat loss through radiation, conveetion and evaporation (termed by Rubner physical heat regulation), whilst changes in the heat production (Rubner's chemical heat regulation) take place only to a small extent. In fact, Rubner has said that a man feels comfortably warm only when the chemical regulation of his heat balance is completely eliminated. In a cool climate chemical heat regulation can only be spoken of in the sense that the stimulating effect of cold on the skin causes reflex innervation of the muscles, resulting in their movement or increased tone, which brings about an increase in the production of heat, *i.e.*, the increased metabolism is really due to the muscular action and not to cold *per se*.

The question naturally arose whether the chemical heat regulation plays any part in maintaining this equilibrium in the tropics where the external temperature is high; in other words, whether the body responds to these different conditions by a reduced combustion of food material. This problem has been attacked in two ways: first, by a comparison of the calorific value of the food actually katabolized by Europeans living in the tropics, with the average value found in temperate climates, and, secondly, by a comparison of the total metabolism in both parts of the world, as determined by the respiratory gas exchange, that is, the oxygen absorbed and the carbon dioxide eliminated, the experiments being carried out otherwise under exactly the same conditions.

The most important work in the first direction is that of Eijkman (1893), who investigated the food of seven Europeans living in the Dutch Indies. His experiments, lasting for several days, were carried out as follows: At each meal each person under observation took a second portion of each dish, similar in quantity, as judged by the eye, to that which he consumed, and these duplicate meals were collected for each day and the protein, fat, carbohydrate, etc., in them estimated. At the same time the fæces were collected and analysed to determine the quantity of food actually absorbed.

Allowing for the loss in the fæces, he obtained the following figures for the average constituents of the food actually utilized:—

Protein	88.2 grms.
Fat	79.1 grms.
Carbohydrate	256.4 grms.
Ash	17.5 grms.
Alcohol	28.5 grms.

From the results he calculated that for a man weighing from 65 to 70 kilograms the heat production from the food amounted to 2,400 to 2,500 calories, a figure which does not differ from that given by Rubner for men doing a similar class of work in Europe, namely, 2,445 calories. The excretion of nitrogen in the urine and fæces showed that, on the whole, his subjects maintained nitrogen equilibrium during the experiment.

Eijkman concluded from these experiments that there was no evidence that chemical heat regulation played any significant part in the thermo-equilibrium of inhabitants of the tropics.

A different conclusion was arrived at by Ranke (1900), who published the results of observations upon himself extending over a few days, comparing the calorific value of his food in Europe and during a short residence in Brazil. In Europe the heat value

of his daily food in two experiments was 3,527 and 3,514 calories respectively. In Brazil, however, the calorific value of his food was much less, being only 2,812, 1,920 and 1,948 calories respectively in three series of observations.

Ranke's experiments have been criticized adversely by Glogner (1909), who conducted similar determinations upon himself at different times during his residence in Sumatra and Padang and again after his return to Europe. He stated that loss of appetite is a common experience during the first period of residence in the tropics and attributes the lower values obtained by Ranke to the fact that the latter had only been a few months in the tropics when the experiments were carried out.

Glogner's experiments, conducted after a six years' residence, and lasting for fourteen days, showed the average energy value of his daily food to be 2,118 calaries, or 28.8 calories per kilogram of body weight per day. A similar experiment was performed in Europe fifteen years later—five years after his departure from the tropics—and then the daily average was found to be 2,038 calories, or 25.5 calories per kilogram of body weight. It is doubtful, however, whether any value can be placed on these observations ,since the first series was made when the subject was 32 years old and weighed 71.1 kilograms and the series for comparison when the subject was 47 years old and weighed 80.3 kilograms.

Experiments were carried out also upon themselves by Schilling and Jaffé (1909) during a visit to West Africa and the results were compared with observations made in Berlin, both before and after their journey. There were no appreciable differences between the heat value of their food in both parts of the world, the average being 2,863 and 2,953 calories per day for Jaffé and 2,953 and 3,021 calories per day for Schilling in Europe and Africa respectively. In both places nitrogen equilibrium was approximately maintained on about 17 grammes of nitrogen per day.

In a similar way the nutritive value of the food of native races in the tropics has been estimated for comparison with that of white people. Eijkman (1893) examined the food of five Malays in a similar manner to that employed in his experiments quoted above and found the following average for the food actually katabolized, after allowing for the material lost in the fæces:—

Protein	59.9 grammes
Fat	25.0 grammes
Carbohydrate	462.0 grammes
Ash	13.2 grammes

The heat value of the food was about 2,349 calories for an average body weight of 50 kilograms, *i.e.*, a figure slightly higher per kilogram of body weight than that given by Rubner for men in Europe. The amount of unabsorbed matter in the fæces was much greater in the Malays than in the Europeans, probably on account of the large preponderance of vegetable food in their diet.

An extensive inquiry has been made by McCay (1912) in India into the food of various native races. For Bengalis he found that the calorific value of the food was higher (3,196 calories) and the nitrogen lower than that of Europeans. A study of the diet and nutrition of the Filipinos was made by Aron (1909) and the average composition of the daily allowance in the Manila native prisons was given as:

Protein	55.9 grammes
Fat	27 grammes
Carbohydrate	510 grammes
Calories	2,646

An estimate of the calorific value of the food eaten by a Filipino living under normal conditions corresponded to from 2,500 to 2,600 calories and when allowances were made for the smaller body weight of Filipinos (50 to 55 kilos.) this value corresponded to the requirements of a working-man in Europe performing moderately hard labour.

Recently Campbell (1917) examined the food of several native students (Chinese, Tamil, Malay and Brahmin) and obtained values ranging from 1,502 to 2,492 calories per day.

The results of these investigations into the food value in the tropics make it clear that in general the requirements in calories, either of white men or coloured natives, does not differ appreciably from European standards. The experiments quoted above indicate that the amount of heat produced by the combustion of food is not any less in the tropics than in a temperate climate and that nature does not have recourse to a reduced metabolism to regulate body temperature.

The energy involved in the total process of oxidation (heat production) taking place in the animal body, may be measured either by the actual heat value of the food digested (calorific value of the food), or again by the quantity of oxygen used up and carbon dioxide and water produced (the respiratory exchange), which measures the end products of this oxidation.

If metabolism would play any appreciable part in controlling the body temperature in the tropics, it would find its expression in a reduced oxygen absorption and carbon dioxide production.

Experiments upon the influence of high external temperature and humidity upon the respiratory exchange have been carried out from this point of view under artificial conditions upon man and animals, and on man in the tropics.

The general results of these experiments show that with cold-blooded animals the oxygen absorbed and carbon dioxide eliminated are directly proportional to the external temperature, in other words, there is no heat regulation and the body temperature is that of the surroundings. With warm-blooded animals, on the other hand, the organism regulates its heat to a more or less extent. With the monotreme, *Ornithorhynchus,* the mechanism is almost entirely chemical, thus with increasing external temperature the metabolism decreases until a temperature of 32° C. (89.6° F.) is reached, the body temperature remaining throughout almost constant; above this the animal's temperature rises, thus indicating that the regulatory mechanism is failing, until finally with increasing outer temperatures the animal behaves like a cold-blooded animal.

In the rabbit the same is observed, but to a less degree, because the mechanism is complicated by loss of heat by physical means.

In man the elimination of carbon dioxide is not affected by rising external temperature in a constant manner. In some experiments carried out under artificial conditions it has been noticed that with rising temperature the carbon dioxide sinks in quantity at a temperature of about 15° C. (59° F.), reaches its minimum between 20° C. (68° F.) and 25° C. (77° F.), and then rises slightly. In other experiments, however, no such change has been observed. Generally speaking all that can be said is that there appears to be an ill-defined zone of temperature in which the metabolism is at a minimum. When the external temperature and humidity are so high that the physical regulation fails and a rise in body temperature results, this rise is accompanied by an increased metabolism, still further increasing with continued rise of body temperature, until dangerous conditions are reached, as already stated.

A study of the gaseous metabolism under actual tropical conditions was made by Eijkman in Java. By means of the Zuntz-Geppert method he determined the quantity of oxygen consumed and of carbon dioxide eliminated during rest by 11 Europeans and 12 Malays. He obtained the following averages as the result of 48 experiments on Malays and 37 experiments on Europeans (See Table 3). The numbers are calculated to a body weight of 64 kilos.

TABLE III.

	Oxygen Absorbed per minute	Respiratory Quotient.
Europeans in Java	245.7 ..	0.791
Malays in Java..	251.5 ..	0.880
Europeans in Europe	250.2 ..	0.775

Eijkman interpreted these results as confirmatory of his other experiments already quoted, namely, that the heat production by the body in the tropics is not less than in a temperate climate, and that therefore change in heat production plays an insignificant part in the regulation of temperature. He attributes the higher respiratory quotient of the Malays to the larger proportion of carbohydrates in their diet.

In reviewing these researches on the metabolism in the tropics it is necessary, before drawing any conclusions, to consider the limitations of metabolic experiments in general. Contradictory results may be accounted for in some measure by different food, habits and customs in various countries in which the experiments have been carried out, and by individual variations. Moreover, up to the present no definite standard has been acknowledged.

A large number of observations upon metabolism during complete rest, which is termed basal metabolism, have been carried out during several years in the Nutrition Laboratory of the Carnegie Institute in the United States by Benedict and his co-workers. Subjects included men and women of various ages, athletes, vegetarians, etc. The general conclusions drawn from these experiments have been embodied in a paper by Benedict (1915) upon the factors affecting basal metabolism, in which he pointed out that a much larger number of factors enter into this question than has been hitherto recognized. Although body weight plays an important part there is no direct relationship between the body weight and the total heat production. Similarly with body surface, the general belief that heat production is determined by body surface is not strictly accurate; a careful analysis of metabolism measurements shows that the heat output is not proportional to the body surface. Other factors are the proportion of inert fat and active protoplasmic tissue in the body composition, and also the height and age. Finally there are large variations from day to day in the same individual. Summing up his conclusion Benedict says:—

> It is clear that the basal metabolism of an individual is a function first of the total mass of active protoplasmic tissue and second of the stimulus to cellular activity at the time the measurement of the metabolism is made. Apparently at present no law can be laid down that will cover both of these important variables in the basal metabolism of an individual.

In the light of this work it is at once seen that units for comparing the metabolism are still only in the making, and a comparison is only possible of the averages of experiments on large numbers of individuals, extended over a long period of time, so as to eliminate changes which might be due to the temporary ascendency of any one factor. It is obvious, therefore, that researches which have been made hitherto on total metabolism have not been on a sufficiently large scale to justify any definite conclusion and probably the discrepancies in the results of different experimenters may be accounted for in this way.

The researches into the total metabolism and heat production in man have so far not revealed any changes which might be attributed to the influence of climatic conditions. It has, however, repeatedly been pointed out that the dietary of the majority of the aboriginal races in the tropics contains a relatively small proportion of protein. This fact has naturally led to the presumption that dwellers in the tropics require a less amount of protein in their food. Protein differs from the other food constituents in the respect that it is utilized by the organism in both directions, namely, for producing energy and building up tissue. It is, therefore, not unexpected that the protein requirements of tropical inhabitants has been studied in detail.

Eijkman (1893) in Java found that Malays consumed 73.3 grammes of protein per day, of which about 56 grammes were actually metabolized, an amount far below the standard usually accepted in Europe (100 grammes). An extensive series of observations on the protein content of the dietary of native races in India has been carried out by McCay (1912), who investigated its bearing upon the physique and general efficiency of his subjects. In his opinion the small quantity of protein generally consumed by the natives was not the result of want of desire but of inability to procure a larger quantity and he convinced himself that most natives would eat more if they could obtain it. He concluded that those races with a higher level of protein interchange were generally more robust, energetic and more manly. In the same way the daily food of Filipino prisoners, according to Aron (1909, contained only 75 grammes of protein.

A much higher quantity of protein was utilized, according to Eijkman, by Europeans living in Java. He found that the food of his experimental subjects

contained 99.6 grammes of protein, of which 88.2 grammes were actually absorbed, which amount corresponds to the normal protein requirements in Europe. Other observers who examined their food during a visit to the tropical zone, confirmed this. Thus Ranke, during his voyage to Brazil, found very little change in the protein of his food, and Jaffé and Schilling found that nitrogen equilibrium was maintained on the same amount of protein in Europe and in West Africa.

(To be Continued.)

THE INIQUITOUS TRADE NAME.

By **Sydney H. Stroud, F.I.C., Ph.C.,**
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Trade names, also called "fancy" names, are given to drugs, chemicals and preparations by the makers under such laws that they can be used by no other person. By judicious advertising a demand is created for such drug under a name reserved for a particular person or corporation, and the result, as far as the medical practitioner, pharmacist and general public are concerned, is decidedly unsatisfactory, since it tends to create a monopoly. Some fancy names are so widely advertised and blazed before the public that they become part and parcel of our language. As examples we have "aspirin," "vaseline," "tabloid," etc., much to the owner's satisfaction.

The prescriber has failed in the past to realize the fact that if he orders any drug under a protected name the pharmacist has to supply that drug as made by the owner of the protecting title, although he may have a supply of the same drug under its correct or official name.

A hypnotic powder is required and the erring prescriber dashes off:—

℞—
Veronal, 0.6 grm..
Ft. pulv., at bedtime.

absolutely regardless of the fact that he is insisting on a foreign-made article, made by one particular firm, but without insisting on a definite quality. The pharmacist will have to dispense this particular brand (he has no option in the matter) and thus is forced to complete the cycle of events which kills off our chemical trade and plays into the hands of individual firms. Much better to have written:—

℞—
Barbitone, 0.6 grm..
Ft. pulv., at bedtime.

thereby cutting out the "fancy" name and using the correct official title for the same substance and incidentally insisting on an approved standard of product and not on who shall make it. The result is scientifically sounder and ethically better.

Here is another faulty order:—

℞—
Aspirin, 0.3 grm..
Phenacetin, 0.12 grm..
Pulv. Doveri, 0.12 grm..

Phenacetin and Dover's powder are two frequently prescribed official drugs, and the names used are officially recognized. The word "aspirin" is not official and only represents the product of a certain firm, without insisting on the definite official standard. By writing:—

℞—
Acid. Acetylsal., 0.3 grm.
Phenacetin, 0.12 grm.
Pulv. Doveri, 0.12 grm.

the prescriber will get three official articles of definite standard and composition and without playing into the hands of any particular maker.

The prescriber should realize that every time he orders "lysol," "heroin," "urotropin," "trional," etc., he is insisting on the products of certain privileged firms and that, so long as he orders in this way, the official products cannot be supplied.

It is quite obvious from hundreds of prescriptions I have seen that the prescriber had no intention of playing into the hands of any particular maker, whether foreign or not. What he requires is a certain drug of definite purity and standard and he cares not whether A.B. or C.D. made it. Unfortunately, if he orders it under a name owned by A.B. the pharmacist has to supply it. Thus A.B., in virtue of selecting a euphonious name and a plausible traveller, gets the business. The unfairness and disadvantage of the fancy name does not stop there, for while the drug masquerades under the fancy name, it is not bound by official and exacting standards and its quality may and often does fluctuate, whereas the same drug sold under official names must conform with certain standards enforced by law.

Huge businesses have been built up, particularly in foreign countries, by working the protected name for "all it is worth." Those who order the drugs under these names help to swell these coffers, the public often paying a lot for the name and a little for the drug. As a case in point, bismuth subgallate, official in the French Codex and many pharmacopœias, appeared on the market in fancy dress and was widely prescribed under that name at about ten times the price of bismuth subgallate. The makers of the bismuth salt can sell but little of their product, not because it is no good or impure or faulty in manufacture, but because it is not ordered under its popular name. Multiply this instance by a few thousands and you get nearer the actual position to-day, and we cannot ignore the fact that the medical profession is very largely responsible for this state of affairs. There are very few who will not admit that it is time the conditions were remedied. The various makers of drugs must compete on the value of the substance and not on the name. As has been mentioned above, it is nowadays often difficult to detect or realize that a name is a "fancy" one. In many cases this euphonious name is used along the line of less resistance, the official or chemical name being less known and probably more cumbersome. The pharmacist, who devotes more time to the individual drugs, is in the best position to use discretion as to the source of the drug. This is recognized by the more exacting training and education required by modern legislation.

The pharmacist, under the faulty method, often needs to stock the same drug under several different names. This is no flight of imagination. Look up in any book on synonyms under, say, phenol phthalein or hexamine and then take a trip to the nearest

pharmacy and have a look at the motley crowd. It is by no means an uncommon experience for a pharmacist to open a hundred gramme packet of one to obtain a few milligrammes for a prescription. The balance of the stuff is put back on the shelf, to rest in peace, it may be for years or it may be for ever, as the song has it. The demand dies with the birth. Probably the maker tries again later with another name.

The most obvious remedy is to use universally recognized names only. A very comprehensive list of synonyms occurs in the Australian Pharmaceutical Formulary. Only such names as are given in the British Pharmacopœia, the British Pharmaceutical Codex or other modern standard work should be used.

Recognizing that even then hundreds of drugs and preparations may slip through under an unrecognized fancy name, perhaps an arrangement could be made so that orders (including prescriptions) could be marked to the effect that "if any drug herein is ordered under a protected or fancy name the recognized equivalent may be supplied." This might be indicated by the single word "equivalent" or more simply the algebraic sign " = ".

In very few cases, if any, would this lead to a lowering of the standard; in fact, in nearly every case it would bring the article, as stated above, within the official standards.

The owners of the fancy name hangs out the bogey: "Don't use the product of anyone else; it is sure to be inferior." The experience of the writer is that a drug conforming with the requirements of modern official and accepted works is just as efficient when made by A.B. as when made by X.Y.Z. & Co.

A NOTE ON THE CHEMICAL TESTING OF BARIUM SULPHATE FOR USE IN X-RAY DIAGNOSIS.

By **H. Priestley, B.Sc., M.D., Ch.M.,**
and
H. G. McQuiggin, B.Sc.

(From the Department of Physiology, University of Sydney.)

The insolubility of barium sulphate and its cheapness as compared with bismuth salts have led to the extensive use of this salt for producing shadows in X-ray examinations.

Barium sulphate is a very insoluble substance, both in water and in acids, and there is no possibility of it being converted into soluble barium salts, either in the stomach or intestines. It must, however, be pure, and, in particular, must be free from soluble barium salts, which are very toxic, even in comparatively small doses.

Barium sulphide and barium sulphite have been administered in error on several occasions with fatal results, so that it is necessary when ordering to write out in full "Barium sulphate for X-ray diagnosis."

Since methods for determining the purity of samples of barium sulphate are not readily available the following may prove useful.

When a barium meal is given the salt comes into contact with the acid contents of the stomach—any soluble impurities will be extracted here—so that it seems natural to estimate what percentage of the given sample of barium sulphate is soluble in hydrochloric acid of approximately the same strength as the hydrochloric acid in the gastric juice. Any large amount of soluble substance would make one suspicious of the sample. Acting on a suggestion of Professor Chapman, we have boiled 10 grammes of the barium sulphate with 100 c.cm. of decinormal hydrochloric acid (approximately 0.3%) for one hour. About 10 grammes of the sample, carefully dried to constant weight, is boiled with 100 c.cm. of decinormal hydrochloric acid for one hour, is then filtered through a prepared Gooch crucible, washed until the washings no longer give a test for chlorides on the addition of silver nitrate and dried to constant weight. The difference in the weight before and after treatment with the acid will give the weight of impurities soluble in decinormal hydrochloric acid. The hydrochloric acid solution can be used to determine the nature of the impurities, if necessary.

In Merck's Annual Report for 1912 a method is given for estimating qualitatively the impurities of samples of barium sulphate which we have found useful.

In order to show that the substance is barium sulphate one gramme of the sample is boiled for one minute with five grammes of sodium carbonate crystals in 15 c.cm. of water and then filtered. To the filtrate is added excess of hydrochloric acid and then barium chloride solution is added; a white precipitate is produced, showing the presence of sulphates. The precipitate remaining on the filter is washed off with water and nitric acid added. The solution thus obtained after filtration gives a white precipitate with sulphuric acid, showing the presence of barium.

To test for the presence of soluble barium salts and heavy metals, 10 grammes of the sample are boiled with 10 c.cm. of acetic acid (sp. gr. 1.064) and 90 c.cm. of water and filtered. Fifty cubic centimetres of the filtrate are evaporated to dryness on a water bath. (It is inadmissible to use the filtrate itself in testing for barium.) The residue after evaporation is treated with 20 c.cm. of water and the solution filtered. If a few drops of dilute sulphuric acid be added to the filtrate no separation of barium sulphate should occur within an hour. This test reveals the presence of barium carbonate and soluble barium salts. Twenty-five cubic centimetres of the acetic acid extract should remain unaltered on the addition of a solution of sulphuretted hydrogen—absence of heavy metals.

In order to test for barium phosphate, which, while insoluble in water, is readily soluble in dilute acids, 2 grammes of the sample are boiled with 10 c.cm. of nitric acid (sp. gr. 1.149 to 1.152) and filtered. The addition of ammonium molybdate solution to the filtrate should not cause the separation of a yellow precipitate within an hour.

If 2 grammes of the sample are rubbed up with 10 c.cm. of a solution of stannous chloride, the mixture should not assume a dark colour within an hour. This shows the absence of sulphites.

Barium sulphate for internal use must satisfy these requirements, for, in view of the large doses administered, even small amounts of barium salts other than the sulphate may prove dangerous.

Reports of Cases.

A CASE OF MYOMECTOMY DURING PREGNANCY.

By **Gabriel Farmer, M.A., M.B., Ch.M. (Oxon.), F.R.C.S. (Eng.),**
Honorary Surgeon, General Hospital; Surgeon, Lady Musgrave Hospital, Maryborough, Queensland.

The following case is of interest, illustrating, as it does, the tolerance of a pregnant uterus to surgical interference. In the current literature at my disposal I cannot find a precisely similar case recorded.

Mrs. I., *æt.* 31, married 3½ years, consulted me on August 15, 1918. So far there had been no offspring nor history of miscarriages. On the date of my first seeing her, however, she stated that menses had not occurred for the last three months. She had suffered from morning nausea, but the chief complaint was intense pain in the right iliac region, with constipation during about fourteen days before seeing me. The temperature was normal.

On external palpation an elastic tumour was felt in the right iliac region, the definition and characteristics of which were obscured owing to the extreme tenderness.

On vaginal examination one could feel the *fundus uteri* bimanually pushed to the left and well above the pelvic brim. The vaginal cervix corresponded in direction to this displacement. Through the right fornix a tumour could be felt. The great pain caused by this manipulation made matters so uncertain as to require no further comment. The dictum of one of my old teachers, Sir Frederick Treves, which I have always found so true, I adhered to, *viz.*: "Never be too cocksure with regard to the nature of an abdominal tumour, and always look out for the unexpected."

In spite of complete rest and palliative treatment the patient was admitted into hospital, there being no improvement. I operated on August 23, 1918.

The abdomen was opened through the right *linea semilunaris*. The tumour was easily delivered through the wound and proved to be a non-pedunculated myoma, growing from the anterior surface of the right cornu of the uterus. There were no adhesions whatsoever. It is difficult to describe the size, the base being so much larger than the apex, but of that mention will be made later. The uterus itself corresponded to fully three months' pregnancy. The peritoneum was incised round the tumour about 3.75 cm. from the base and a cuff carefully stripped away to the base.

It was then with extraordinary ease that the whole mass shelled out, a blunt dissector being used. A fairly deep crater was left, but the uterine cavity was not encroached upon. The bleeding was not sufficient to cause anxiety. The muscular walls of the crater were closed up by catgut mattress sutures and then the peritoneal cuff inverted and closed by a continuous Lembert suture of cotton thread. The abdominal wall was closed in the usual way.

The growth removed weighed 425 grammes. Making allowance, however, for the loss of its fluid contents, the probable weight before removal would be at least 480 grammes.

The patient made a perfect recovery and was discharged from hospital on September 23, 1918.

Th after-history is of special interest. It was difficult to decide what steps to take should pregnancy continue, which it did. The patient was so comfortable and free from pain that I decided to wait, examining her from time to time. At the end of the seventh month, owing to her size and symptoms of discomfort, she was readmitted into hospital, when I induced labour. The patient was delivered of a healthy boy, weighing 3,300 grammes, thee only flaw in the case being that the presentation was occipito-posterior, involving the use of forceps and a ruptured perineum. She did well, however, and has had no trouble whatsoever since.

Reviews.

FROM FIRING LINE TO BASE.

A book founded on the personal experiences of its authors must always command attention, and the "War Surgery" of Hughes and Banks is made especially attractive by the fact that the duties of each have been spread not merely over all units from the firing line to the base, but also over both eastern and western theatres of war.[1]

The first impression gathered in reading this book is the extreme thoroughness with which the bacteriological side of the subject has been investigated; the second is the complete faith reposed on the Carrel-Dakin method of treatment. It is impossible not to correlate these two facts. In the confusion of opinions on the merit of this method it has become noted that success depends not only on the rigid adherence to detail in the surgical part of the procedure, but also on the efficiency of the bacteriological control. It is co-operation in these two departments that forms the coping stone of good results, and the authors have evidently obtained such co-operation. It is easy to catalogue its disadvantages. An increased staff is necessary; greater supervision is entailed; not infrequently the bed becomes saturated; the solution is unstable and needs regular testing; the apparatus is complex; a dermatitis is not unlikely, and so forth. But the claim that, of 600 cases of secondary suture following the treatment, 90% resulted in immediate union, cannot lightly be put aside.

A chapter by Colonel Smith on the influence of climate and certain diseases on the healing wounds is of profound interest. In Salonika when the vardar blew, a dust storm that carried dried particles of horse dung, which pervaded everything, a severe form of malaria was prevalent and the infliction of a wound commonly precipitated an attack. At times, however, attacks came on insidiously and ended in coma, requiring differentiation from acute sepsis and cerebro-spinal meningitis. It became the routine to treat all cases of coma intensively with quinine, so many of them were malarial in origin. Locally the wounds of malaria patients showed an inclination to bleeding and a tendency to halt and become obstinate. Occasionally white plaques developed in the wound and a painless erysipelatous condition was not infrequent. The exhibition of quinine rapidly improved them.

The faults of the book are due to its dual control and to defective editing. A long list of the attributes of the ideal antiseptic is set forth on p. 223 and sixty pages later the same elementary facts are repeated. The chapter on war nursing is not up to the general level of the book. In the treatment of thoracic wounds insufficient attention is paid to the new surgical field opened up by French surgeons. But the authors point out that they have had no personal experience of the new methods and their book reflects only their personal experience. On the whole, it will be found to represent the most thorough consideration of war wounds yet presented by British authors. Its illustrations suggest rather the profusion of an American text book.

The announcement that a baronetcy has been conferred for public services rendered during the war on Dr. Norman Moore, the learned President of the Royal College of Physicians of London, will be read with eminent satisfaction by all members of the medical profession.

Dr. T. A. Henry, late Superintendent of the Laboratories at the Imperial Institute, London, has been appointed Director of the Wellcome Chemical Research Laboratories, London.

Dr. F. L. Pyman, the former Director of these Laboratories, has accepted the Professorship of Technological Chemistry in the Manchester Municipal College of Technology and in the University of Manchester.

Some changes have recently been made in the Health Department, Queensland. For a little time J. Booth Clarkson has been acting at Health Officer at Moreton Bay. As he is about to replace Dr. J. H. Macarthur as Medical Superintendent of the Dunwich Asylum, it has been found necessary to engage the services of another health officer at Moreton Bay. Dr. J. W. Heaslop has been selected for this purpose. Dr. J. E Steeter has temporarily joined the staff of the Health Department of Brisbane.

[1] War Surgery, from Firing Line to Base, by Basil Hughes, D.S.O., M.B., M.C., B.Sc., F.R.C.S., and H. Stanley Banks, M.B., Ch.B., D.P.H., with Special Chapters by Lieutenant-Colonel L. F. Smith, C.M.G., and Miss C. Bilton, R.R.C., Q.A.I.M.N.S., and an Introduction by Colonel Sir T. Crisp English, K.C.M.G.; 1918. London: Baillière, Tindall & Cox; Royal 8vo., pp. 633, with 9 coloured and 373 black and white illustrations. Price, 30s. net.

The Medical Journal of Australia.

SATURDAY, MAY 10, 1919.

The Home-Coming.

The medical profession in Australia comprises approximately three thousand members. Each year this number is increased by a steady stream of fresh graduates, while the number of those who fall out of the ranks remains relatively small. During the period of the war about one half of the total number of medical practitioners offered their services for duty with the fighting troops and the majority went overseas to perform those duties which are required to keep an army in health and to reduce the wastage of efficient combatants to a minimum. The services were rendered willingly and skilfully. Whatever defects there were in the organization of the Army Medical Service, they cannot be traced to any neglect of duty on the part of the individual medical officers serving with our armies nor to any lack of capability in carrying out what was required of them. The record of this service overseas is a wonderful one; the achievements of all, from the Director-General Medical Services, Sir Neville Howse, whose extraordinary organizing capabilities and splendid grasp of his men have gained for him one of the highest reputations among Australian soldiers, to the youngest Captain, will live in the memory of men for long. There were times when the authorities at headquarters sought for more men to help those who were bearing the brunt of the field work and were facing the hardships and dangers of the front line unrelieved for far too long. These men, especially of the younger generation, never complained of their lot. They faced their duty without a flinch and obeyed the commands given them cheerfully and smilingly. They remembered the promise given them at the outbreak of hostilities that their interests would be safeguarded at home, and they trusted their colleagues who were less fortunate in that they were unable to answer to the Country's call. These men are coming home now. After years of sacrifice they look for the opportunity to re-establish themselves and gradually to make up for the pecuniary loss associated with the prolonged period of war service. They have had enough of military duty—for the present, at all events. But the authorities find it necessary to call upon them to occupy the positions of medical officers at the Australian General Hospitals within the Commonwealth, because too few civil practitioners are coming forward to release them from military duty. Is that the way we discharge our promises to these splendid men to look after their interests during their absence?

Many of these men feel the need for guidance in civil practice, because of the long interruption in their ordinary medical activities. They need post-graduate training, arranged in a manner that will enable them to seize any suitable opening to enter general practice once again, or for the first time. In some cases all that is needed is a period of hospital experience. The proposal made from the Melbourne Hospital meets the needs of these men in a most admirable manner. It is that special positions should be created for them, so that they could spend a period of six months as resident medical officers during which time they could pick up forgotten facts and re-acquire dexterity in the manipulations of civil practice. But since the funds of the Hospital cannot be used for this purpose, the Department of Defence is asked to grant the men leave on full pay for the purpose. It is a fair request. Moreover, precisely the same thing is being done in Great Britain. Unfortunately the Department, with characteristic desire to be relieved of extra burdens, does not approve of the proposal. For those who need more training, a full post-graduate course should be provided at our medical schools and in these cases, also, the Department should grant leave on full pay for six months. It is easy to understand that the Department of Defence is placed in some difficulty in connexion with these proposals. If these returned men were granted leave to take up full time positions at civil hospitals or to devote the whole day to study, who is to look after the military hospitals? We must therefore admit that it is necessary to find civilian practitioners to staff the military hospitals before we can justly urge the Department to adopt the suggested plan. It is to the fresh graduates that we must look for this relief. They would have gone abroad on active service, had the war lasted longer. They should "do their bit" now.

Other of the men who are coming home, will want to settle down without delay. Room should be made for them. It is not too much to ask those who enjoyed comfort, prosperity and safety during the long years of their absence, to welcome these men back and to see that they have a proper chance to establish themselves rapidly. It should never be forgotten that but for the war, these men would be earning a considerable part of the income that is now being received by the men who have stayed at home.

THE DOCTOR, THE PHARMACIST AND THE PATIENT.

In the present issue we publish three items of information touching on the relationship which exists between the medical practitioner, the dispensing pharmaceutical chemist and the patient. From the first of these communications we learn that the practitioner is frequently the unconscious cause of forcing the pharmacist to deliver to the patient a proprietary article, often of enemy origin, because he prescribes pharmaceutical preparations carelessly or unknowingly by protected names. In a certain number of instances, no doubt, the practitioner does not suspect that the common name for a preparation, such as heroin, is in reality a fancy name, introduced by an enterprising firm who, recognizing the futility of endeavouring to patent a drug, is clever enough to offer to the medical profession and to the public a preparation under a catchy protected name at a price considerably above the price of the identical substance sold under its chemical or official name. This undoubtedly indicates that too often the medical practitioner ignores what pharmacy has to teach and seeks a short cut in applying medicinal treatment to his patients. That the habit of utilizing stock prescriptions or proprietary mixtures is not to the advantage of the patient cannot be denied. It may be held that many of the drugs in the Pharmacopœia are relatively useless in the treatment of disease. Modern pharmacology, however, has demonstrated that a powerful therapeutic action can be obtained if pure drugs are given in adequate doses, carefully adjusted to the bodily habits and physical condition of the patient. The sceptic is usually a practitioner who does not grasp the opportunity of studying pharmacology and of acquainting himself of the manner in which various drugs should be exhibited to obtain desired results. Prescribing with the assistance of the advertisement pamphlets of the manufacturing chemist is removed from utilizing the wares of the patent medicine vendor by but a small step. It is rarely expedient and never necessary to prescribe an expensive proprietary mixture. Every practitioner should be possessed of sufficient knowledge of pharmacology to be able to write a prescription that will be more useful to his patient than any protected mixture. His knowledge of drugs should enable him to know exactly what he is giving to his patient, and he should recognize that he is responsible to his patient for the effect of his treatment. It is useless to deny that some manufacturing firms produce better products than do others. When it is desired to use a certain drug which is prepared under numerous names by as many firms, the practitioner should realize that his experience and that of other practitioners, added to the careful chemical analysis carried out by competent persons, are the sole reliable guides to enable him to make a wise selection. A striking instance of the need for a careful selection is met with in connexion with the arseno-benzol drugs. The practitioner cannot be expected to make a chemical and pharmacological investigation of these preparations. But he is not justified in using any of them without having taken all precautions to ascertain that the drug he is using is the best obtainable for the particular purpose of his treatment. If adequate precautions are taken to ensure that the drug employed is prepared by a competent firm and that it has been proved to yield uniformly good results, the practitioner may rest content that he has discharged his obligations to his patient in respect to the drug. In the case of those drugs which appear in the official lists of drugs, he should refrain from ordering them under fancy names, because by so doing, he accepts preparations which need not be subjected to searching tests to guarantee their purity. Should the pharmacist supply a drug that does not conform to the official tests, the responsibility rests with him.

The third communication to which we would refer, deals with the precautions that should be taken by the practitioner to ensure that drugs used in the course of medical practice are of standard purity. The two fatal accidents that have occurred in New

South Wales within a few months from the use of barium sulphite in the place of barium sulphate for X-ray diagnostic work should be regarded as a serious warning. The medical practitioner must be held responsible to his patient that the drugs he prescribes are suitable and that the doses are properly administered. The responsibility is handed on to the registered pharmacist when the prescription is definite and the purity of the drug ordered is indicated or inferred. The pharmacist is required to undergo training in analytical chemistry before he is registered and the reason for this training is to render him competent to test the purity of the drugs he employs. If the registered pharmacist elects to trust a certain firm of manufacturing chemists that the drugs supplied are true to label, he does so at his own risk. A reputable firm will employ trained chemists who are prepared to accept responsibility, but it must be remembered that the law requires the pharmacist and not the firm of manufacturing chemists to be registered. We have recently commented on the obvious need for fastening the responsibility for a death due to the substitution of a therapeutic dose of the drug specified in a prescription by a lethal dose of a dangerous drug to one person. The public should be assured that the pharmacist who dispenses the prescription of a medical practitioner, will be held responsible for the accurate dispensing of the prescription and for the use of drugs conforming with the official standards. It would be intolerable if the law did not provide for the adequate punishment of a pharmacist through whose carelessness or criminal action the patient received a dangerous dose of medicine. It is also essential that every pharmacist employed in the compounding of medicines should be duly registered as a qualified pharmacist.

THE EDUCATION OF MEDICAL STUDENTS.

During the session of 1917-1918 a number of discussion were carried out by the members of the Edinburgh Pathological Club on the education of medical students.[1] Each discussion was introduced by several papers dealing with one or more subjects of the medical curriculum. The enquiry was conducted with the objects of ascertaining what matters should be taught in the medical course and of defining the extent of the training required in each of these subjects. Teachers of eminence in Great Britain were invited to read papers so that a wider field might be utilized for obtaining information. At the end of the session a report was drawn up by the Club. In this report a summary is given of the general conclusions adopted as a result of the enquiry and certain proposals are made for amendments in the medical course of the University of Edinburgh. These recommendations are so closely concerned with the present syllabus of the Edinburgh Medical School that most of them have little application to Australian conditions. A brief account of them will be published at a later date. The general considerations will be welcomed by all those interested in the education of medical students. The full text of this portion of the report will be reprinted in a future issue of *The Medical Journal of Australia.*

The discussions were mainly concerned with the consideration of the methods for attaining the most efficient training of the student in the shortest period of time. Much criticism was directed against the manner in which subjects were taught. Much attention was paid to the training of the teacher and to the experience needed by him for teaching medical students. Everyone agreed that the length of the course was so limited relative to the amount of knowledge to be required that every effort should be made to confine the instruction to matters of immediate importance in medicine. As far as possible the scientific training of the student should be carried out with references to topics of medical interest. As far as practicable every teacher should have had medical education. In the general report by the Club three general considerations are laid down.

In the first place it is recognized that medicine and surgery no longer form two culminations for the medical course. Public health and preventive medicine have assumed an importance which entitles them to be regarded as one of the main objectives to the training of medical students. At the present time there is a tendency to divide the subject of public health into a number of separate parts. This tendency is due to the fact that different bodies are concerned with the administration of various activities in this direction. As examples, the medical inspection of school children, quarantine and the control of the sale of foods and drugs may be cited. The Club was of opinion that all matters concerned with public health should fall under the direction of one teacher, so that there should be co-ordination in the instruction in public health.

In the second place it was pointed out that students possessed a considerable fund of knowledge in the subjects of the earlier years of the curriculum at the end of the particular courses. Towards the end of the medical course students were found to have forgotten much that they had previously known. The Club was of opinion that it was disadvantageous to the student to acquire the view that a subject was completed when the examination had been passed. It therefore advocated courses of instruction in chemistry, anatomy, physiology and therapeutics which should be continued until graduation. For example, the student is expected to learn some chemistry at school. During the first year pure chemistry is studied in an intro-

[1] An Inquiry Into the Medical Curriculum by the Edinburgh Pathological Club, 1919, Edinburgh.

ductory course. In the second year physiological chemistry is learnt along with physiology. In the third year pathological chemistry is considered along with pathology. Clinical chemistry is studied along with medicine and, in the fifth year, chemistry in relation to public health forms part of the course of public health. The whole of the instruction in chemistry should be under the direction of the Professor of Medical Chemistry. Similar connected courses of study are laid down in anatomy, physiology and therapeutics, starting with the instruction in anatomy and physiology in the second year and in pharmacology and materia medica in the third year. These courses continue until the fifth year and are under the direction of the Professors of Anatomy, Physiology and Materia Medica.

In the third place it was agreed that the student in the earlier years of the curriculum failed to recognize that his daily work had any bearing on practical medicine. The Club was therefore of opinion that clinical instruction should commence with the training of the medical student. The student should attend an out-patient department, where he would learn that elementary facts of zoology, botany, physics and chemistry had definite application in the treatment of the sick.

THE DIAGNOSTIC VALUE OF THE WASSERMANN TEST.

The application of the Bordet-Gengou phenomenon of complement fixation to the specific instance of syphilis, usually known as the Wassermann test, has become one of the standard methods of diagnosis in this disease. The results of carefully conducted experiments have shown that when a few easily distinguished diseases are excluded, a positive reaction is an indication of a syphilitic infection. In practice, however, it is necessary to have evidence that the test has been carried out with proper precautions, that the technique selected is reliable and that the bacteriologist responsible for the reaction has actually performed the test himself. In order that definite conclusions regarding complement fixation may be drawn, it is quite essential that the hæmolytic amboceptor should be standardized accurately against fixed quantities of normal serum. Varying quantities of the amboceptor or immune serum are added to a given quantity of complement, such as 0.1 c.cm. and a standard quantity of a 5% suspension of blood corpuscles. The time factor is of great importance. After a fixed time, such as one hour, the tubes are examined and it is ascertained which contain completely hæmolyzed cells. The amount of immune body necessary under these conditions to induce complete hæmolysis is noted, as is the amount that yields almost complete hæmolysis. If the quantities do not lie very close together, a second series of tubes are put up in which the smallest quantity of immune serum is that which has yielded a partial hæmolysis and the largest quantity is that which gave a clear laked fluid. The intermediate tubes contain graded amounts between these two extremes. When the hæmolytic dose of immune serum is accurately fixed, the test can be performed, but it is essential that exactly the same conditions as regards the amount of ingredients, temperature and time be observed. The test requires much practice and reliable results cannot be expected unless the worker performing the test has been carefully trained in laboratory methods and has had long experience in these manipulations. Each set of tests must be preceded by a special standardization of the fresh serum and of the immune serum. Under these conditions the results obtained will be found to be uniform and reliable.

While few bacteriologists hesitate in accepting a diagnosis of syphilis on the basis of a positive Wassermann reaction, opinions differ concerning the significance of a negative reaction. The significance of this reaction has been investigated by P. Fildes and J. G. Parnell at Haslar and their deductions form a special report of the Medical Research Committee.[1] The persons subjected to the test are singularly unsuited for the purpose of determining the significance of negative responses to it. They consisted of sailors known to be suffering from syphilis or suspected of having been infected. The authors accept as positive evidence of infection the discovery of the *Spirochæta pallida* and also the presence of a chancre with all the attributes of a Hunterian sore, the presence of typical syphilitic rashes and certain abnormalities of the central nervous system. In addition they accept a history of a sore followed by a rash as evidence of syphilis, especially if the previous treatment was by some arsenical or mercurial preparation. The critic is justified in questioning the reliability of this evidence. When they are prepared to regard a previously conducted Wassermann test as presumptive evidence, the critic will be inclined to question whether the subject has been seriously studied. In the next place they regard the appearance of typical syphilitic signs after a doubtful lesion has been treated as evidence of syphilis.

The number of men examined was 1,435. Of these 1,177 yielded a positive reaction. There were 938 in whom *Spirochætæ pallidæ* were found, or typical signs left no doubt as to the nature of the infection, or lastly a history of generalized infection characteristic of syphilis was obtained. In a further 62 men anti-syphilitic remedies had been applied previously by medical officers who regarded the condition as syphilitic. It appears to us that the nature of the infection in these cases is open to doubt. In 16 men the diagnosis was made on the strength of an examination of the cerebro-spinal fluid and of the eyes. In the next place syphilis was assumed because there was a record of a previous Wassermann reaction, or because the test was subsequently shown to be positive. In 35 men the diagnosis was based on combinations of these occurrences. Lastly there were 65 men whose serum yielded positive reactions in the absence of what they term direct evidence of syphilis. It is conceivable, and indeed is even probable, that a syphilitic infection existed in all these cases. Unfortunately, however, the authors have failed to prove it in 162 out of 1,177.

Of the remaining 258 individuals, they state that the Wassermann reaction proved negative. They included 171 who had suffered or were suffering from

[1] An Analysis of the Results of Wassermann Reactions in 1,435 Cases of Syphilis or Suspected Syphilis; Medical Research Committee, Special Report Series, No. 23, 1919.

undoubted syphilis. One of the patients was affected with syphilis in the secondary stage. The primary infection had been contracted 5½ months before. Two others were suffering from tertiary syphilis, while a fourth merely showed signs of old lesions. The remainder were in the early primary stages of the disease. It is claimed that in the early stage the reaction had not developed, while some or all of the remainder were cured of their syphilis. In a few cases the infection preceded the test by two to three months. A positive reaction usually developes within three or four weeks. In addition to these cases, the reaction was negative in 23 men who did not reveal any signs of syphilis, in 45 in whom the diagnosis remained in doubt because the period of observation was too short, and in 8 in whom the diagnosis of syphilis was based on mere hearsay. We would be inclined to accept these cases as probably not syphilitic, were it not for the fact that some of the cases diagnosed as syphilis in men who yielded a positive reaction, were apparently equally doubtful It is therefore difficult to accept the evidence adduced in support of their contention that a negative result of the test is of very great significance in the exclusion of a diagnosis of syphilis. It would seem that much stronger evidence has been produced in the work of others who have deliberately tested the serum of patients who were free from all signs of syphilitic infections and noted the frequency in which a positive reaction was obtained.

PNEUMONIC INFLUENZA.

Six proclamations have been issued and published in the *Government Gazette of New South Wales* dealing with the measures adopted in the endeavour to check the spread of pneumonic influenza between the dates of April 28 and May 1, 1919. In the first the municipal areas of Dubbo, Forbes, Goulburn, Grenfell, Junee, Jerilderie, Lithgow, Orange, Pickton, Wagga and Wilcannia, the town of Crookwell and the Jenolan Caves township are declared to be infected areas. In the second proclamation the restrictions applying to persons resident in the Municipal Area of Bathurst, are lifted. In the third proclamation it is ordered that no persons without authority from the Director-General of Public Health, shall enter an area, including the Parish of Cessnock (the boundaries of the area are defined), unless he consents to enter the Quarantine Camp in the area, remain there for four days and receive a certificate from the Medical Officer of the district that he is free from the said disease. The fourth proclamation, issued two days later than the first three, cancels the order that the Municipal Area of Grenfell and the Jenolan Caves Township are infected areas. Similarly, in the fifth and sixth the restrictions imposed on the inhabitants of the Municipal Areas of Orange and Braidwood are cancelled.

The Department of Public Health of Victoria issued the following circular to the various Municipalities in the State on April 29, 1919:—

(1) The epidemic of influenza now prevalent throughout the State is similar in character to the disease which has occurred every year for many years past. It differs in the fact that it is more widespread than in previous years. The percentage of fatal cases is lower than that of diphtheria, and very much lower than that of typhoid fever.

(2) Owing to the lack of nurses it is not possible to treat every case in hospital, nor is there any necessity to do so. Where patients have homes where reasonable isolation can be secured, they should be kept there if the necessary attention is available.

(3) Removal of persons suffering from serious pneumonic complications is dangerous.

(4) When the disease is prevalent, isolation of contacts is not of much service. Contacts are not infective unless they are sickening with the disease. As long as a contact has a normal temperature he is not likely to convey infection.

(5) Help in infected homes is very necessary, and avoids sending cases to a hospital. Appeal should be made to local Red Cross Society and to other organized bodies for volunteers to visit and aid in the homes of infected families. Motor car owners should be asked to aid by transporting visiting nurses.

(6) Isolation of houses may be effected under the provisions of Section 177, *Health Act, 1915*, as amended by *Act 2810*, Section 4.

THE MEDICAL COUNCIL OF TASMANIA.

In accordance with Section 3 of *The Medical Act, 1918*, of Tasmania, His Excellency the Governor in Council has appointed the following medical practitioners members of the Medical Council of Tasmania. The asterisk placed against the names indicates membership of the British Medical Association:—

*Dr. H. N. Butler.
Dr. W. C. G. Clark.
Dr. E. L. Crowther.
Dr. H. G. Haines.
Dr. E. W. J. Ireland.
*Dr. D. Lines.
Dr. E. T. Macgowan.
*Dr. J. Ramsay.

It will be noticed that eight members have been appointed. The *Act* provides for a Council of not less than five and not more than nine members.

Obituary.

WILLIAM HENRY ELWORTHY.

William Henry Elworthy was the eldest son of Mr. W. Elworthy, of Imbil and Dovedale Stations, Queensland, a pioneer of the year 1863. He was educated in Queensland. While at school he excelled in sport and was the captain of his school football team. After leaving school he entered the Medical School at the University of Sydney and went into residence at St. John's College. He did well at his work and was regarded by his teachers and comrades as a man of more than usual attainments. His popularity was enhanced by his keenness at football and at rowing. He obtained a place in his college team and a seat in the "'Varsity Eights." In 1903 he graduated, taking his degrees in medicine and surgery. During the following three and a half years he served as medical officer at the Coast Hospital and devoted considerable attention to surgery. On leaving the hospital he settled in practice at Penrith, New South Wales, having married the youngest daughter of late Sydney Maxted, Director-General of Charities in the State of New South Wales. In 1910 he went to Queensland and practised first at Esk and then at Brisbane. In 1915 he returned to New South Wales and settled at Randwick, in the neighbourhood of Sydney. It was in the course of his practice at Randwick that he contracted influenza, to which he succumbed on April 16, 1919. He had been attending the late Drs. Noel H. Franki and James Percy Clifford during their fatal attacks of influenza.

As a practitioner he was eminently successful, and his success depended on the thoroughness of his work, the soundness of his knowledge and the energy he displayed in looking after his patients. He was singularly successful as an obstetrician and was proud of his record of 1,760 consecutive maternity cases without a death. The only patient he lost died within a few minutes of his arrival to attend to her. He devoted considerable time to and displayed much skill in gynæcological work. Both his patients and his colleagues had great confidence in him as a women's doctor.

Abstracts from Current Medical Literature.

DERMATOLOGY.

(166) Circinate Persistent Erythema Multiforme.

Graham Little describes a case of circinate persistent *erythema multiforme* in a clerk aged 34 years (*Proceedings of the Royal Society of Medicine*, November, 1918). The eruption was first observed about eighteen months before as small, itching pimples. The patient described two varieties of lesions, a patchy, amorphous erythema with moderate pruritus, which left on disappearance a slight degree of pigmentation and a ringed lesion, which smarted but did not itch, and left either no discolouration or else a faint buff tinge, which ultimately disappeared. On examination a few indefinite erythematous patches such as described by the patient were seen, as well as numerous pigmented areas—the site of previous patches—on the trunk and arms. The majority of the present eruption, however, was made up of vivid erythematous rings with raised, œdematous, but not vesicating edges enclosing spaces of the size of a shilling to a five shilling piece. In places the ring was broken in some part, forming either semicircles or portions of circles. The integument from the buttocks to the angles on both sides were extensively involved with these ringed lesions, whilst a few were distributed on the lower part of the back and on the forearms and shoulders. The initial papules evolved into the circinate lesions, taking about six or eight weeks to reach the size of the largest ring. The Wassermann reaction was negative, and the diagnosis lay between three alternatives, of which the author provisionally accepts the first: (1) *erythema multiforme perstans;* (2) *dermatitis herpetiformis "en cocarde";* (3) *erythème annulaire centrifuge* of Darier. The presence of a few isolated vesicles makes the diagnosis of *dermatitis herpetiformis* possible, but this is largly discounted by the moderate degree of itching. The centrifugal spread, the commencement of the ringed lesion with a rose spot, the comparative absence of itching, the distribution of maximal intensity on the buttocks and thighs, suggest the type named by Darier, *erythème annulaire centrifuge.* However, the case reported strongly recalled that of a type of case first reported by the author, and designated *erythema multiforme perstans* in its clincal appearance, in the persistence of individual circles for weeks or months, as well as in the slight buff pigmentation seen inside the rings.

(167) Lupus Vulgaris.

Carlo Vignolo-Lutati states that the seat of predilection of *lupus vulgaris* is the face, that the constant exposure of the skin of this region makes it susceptible and serves in the pathology of the disease as a predisposing condition (*Urologic and Cutaneous Review*, December, 1918). Of 312 cases observed by Lelovi 276 were on the face. Brocq has written that "The uncovered and unprotected parts of the face are the sites of predilection." The author records a case of *lupus vulgaris* because of its singular configuration, standing out clearly, an anologous case of which he has not been able to find recorded in the literature on this subject. The disease, which occurred in a woman, *æt.* 28 years of age, first manifested itself six years before coming under observation. It commenced as a small red nodule on the right cheek, and spread until at the end of three years it had involved the entire side of the face, including the retro-auricular and the submaxillary regions of the same side. For some considerable time the patient had been accustomed to wear dresses open at the neck, and also to wear around her neck a broad ribbon made of silk or velvet. During the past three years the patient had noticed a dermatosis of a similar character to that on the face, in situations corresponding to the habitually uncovered regions of the neck and breast, whilst this was separated from affected portions of the face by a broad stretch of healthy skin corresponding to the width of the silk or velvet neck-band that the patient had been in the habit of wearing. The singularly assumed disposition of the dermatosis leads the author to emphasize the particular predisposing importance, in the mechanism of the pathology of *lupus vulgaris* in the majority of cases, of an exposed cutaneous region.

(168) Chronic Duodenal Obstruction.

After a careful study of anatomical casts of the duodenum, E. L. Kellog arrives at the conclusion that the duodenum is at a great disadvantage in the matter of drainage and is easily subjected to mechanical interference (*Surg., Gynec. and Obstet.*, February, 1919). The obstruction may occur at any part of the duodenum. The commonest obstruction is due to a kinking at the junction of the first and second parts, and is most commonly seen in gastroptosis, the first part being dragged down by the stomach and kinking where the duodenum is more securely fixed. More distal obstructions are association with adhesions or with a dragging by a displaced hepatic flexure and caecum. The degree of obstruction is great and is only found at operation or by X-ray examination. Toxic symptoms, such as headache and mental depression, are common, while the mechanical symptoms of a mild pyloric stenosis are present. Where the pylorus is resistant to back pressure, pain is a prominent symptom, but where the pylorus is relaxed, vomiting of bile occurs and a typical bilious attack developes. The majority of cases need no surgical treatment, but only the usualy treatment of enteroptosis, *viz.*, abdominal support, rest after meals. Gastro-enterostomy is of litttle use but duodeno-jejunostomy has given excellent results. Fixation operations have also been of value in many cases.

(169) Hydro-Pneumo-Cranium With Air in the Ventricles.

H. E. Potter reports a case of hydropneumo-cranium, an extremely rare condition, occurring in a man aged 40 years, who fell from a height of 5 metres and landed on his hands and face (*Americ. Journ. Röntg.*, January, 1919). At the hospital it was found that he was suffering from a severe fracture of the forearm, but in addition he had a fracture of the mandible and contusion of the forehead and probably a fractured skull. No unconsciousness was present, but there was bitemperal headache and giddiness and the patient complained of discomfort in bending forward. After three weeks, a radiogram showed a stellate fracture of the frontal bone and a large intracranial collection of air. Two weeks later the air had increased considerably and the lateral ventricles were also distended with air. It was found on preparing radiograms in several positions that a large collection of fluid was present in the air-filled cavity. The air and fluid gradually disappeared and had completely gone in two months from the date of injury. Previously reported cases had only been discovered post mortem and were complicated by meningitis. The author makes a plea for the routine radiographic examination of all head injuries with a view to increasing our knowledge of this condition.

(170) Radiotherapy for Uterine Hæmorrhage.

James A. Corscaden (*Americ. Journ. Röntgenology*, September, 1918) states that the treatment of uterine hæmorrhage by radiotherapy is now well established, and since the advent of the Coolidge tube, with the possibility of heavy dosage, it has been widely used. Selected cases only must be treated, and the method of treatment must be thorough. He holds that uterine hæmorrhage is but a variation from the normal, and to bring about cessation, it is necessary to destroy the Graafian follicle. Next to the lymphocyte and spermatozoa, the ripe Graafian follicle is the most susceptible to X-rays or radium. In cases with fibroids, the tumour decreases in size, partly as a result of the creation of an artificial menopause, and partly in response to the direct action of the rays on the smooth muscle cells, causing degeneration and fibrous tissue formation. Suitable cases are those in women with hæmorrhage, who are near the menopause (about 40 years), and unsuitable cases are in younger women in the childbearing period. In the latter, however, radiotherapy should be undertaken in preference to hysterectomy. Gross lesions, such as retroversion, should be corrected before treatment, and carcinoma should be excluded before radiotherapy. The dosage with radium to produce permanent amenorrhœa is as follows: 50 mgm. of unfiltered radium are placed inside the uterus for 24 hours. The dosage of X-rays necessary to produce permanent amenorrhœa is as follows: ten full doses repeated twice at intervals of three weeks. These

doses are given through ten "portals of entry," seven anteriorly below the umbilicus, and three posteriorly; all doses are directed toward the ovaries.

BIOLOGICAL CHEMISTRY.

(171) Indirect Calorimetry.

E. P. Cathcart discusses the use of indirect calorimetry for estimating the expenditure of energy in the human subject (*Journ. Roy. Army Med. Corps*, November, 1918). He points out that many investigators have avoided the examination of the expenditure of energy in man in the belief that the limited means at their disposal have been inadequate for such a purpose. It is true that complicated and costly installations are needed for the direct measurement of the output of heat. There is, however, the indirect method depending on the analysis of the expired air. This method is capable of yielding figures of sufficient accuracy for most purposes. It needs little apparatus and the technique is soon mastered. The principle underlying this indirect calorimetry is that an index of the material combusted in the body can be obtained from measurements of the amount of oxygen taken into the body from the breath and of the quantity of carbon dioxide expired from the body. In the oxidation of a given weight of a foodstuff to its final products, a definite amount of oxygen is utilized, a definite amount of carbon dioxide is produced and a definite amount of energy is liberated. Since the body obtains all its energy from the combustion of foodstuffs and since all the energy developed in the body may be computed as heat, the weight or volume of oxygen absorbed or of carbon dioxide excreted corresponds to the liberation of a particular amount of heat. Several types of foodstuffs are taken into the human body. Each of these requires a somewhat different quantity of oxygen for its combustion and yields a different amount of carbon dioxide. The nature of the food undergoing combustion in the body during any particular period of time must be ascertained. The clue to this information is given by the respiratory quotient, which is the ratio between the amount of oxygen absorbed and the quantity of carbon dioxide excreted. When carbohydrates are being consumed these quantities are equal and the quotient stands at unity, but with fats the volume of oxygen consumed is higher and the quotient is 0.7. When proteins are being used the quotient is 0.8. As the consumption of protein during the short period of an experiment is small, it is usually assumed that it is absent and calculations are made as if the oxidations of carbohydrates and of fats are alone concerned. In accurate work the consumption of protein is determined from the excretion of urinary nitrogen. For every gramme of urinary nitrogen 8.45 gm. oxygen are required for oxidation and 9.35 gm. carbon dioxide are set free. Tables have been constructed, showing the relative combustions of carbohydrates and of fats for respiratory quotients from 0.7 upwards. The determination of the respiratory quotient offers some difficulty since any factor which disturbs the intake of oxygen or output of carbon dioxide, will interfere with the estimation. Such factors are irregularity of the speed or depth of respiration due to nervousness or panting due to exercise. The author considers that the Douglas bag has distinct advantages over the bed respirator calorimeter, the Benedict universal respiration calorimeter, the Zuntz-Geppert apparatus and the Tissot apparatus. The Douglas bag is simpler and more accurate and it affords more nearly normal conditions as regards the air breathed by the subject. It can be used at the bedside, on the running track or on the mountain peak. The author gives a detailed account of the processes and steps in conducting an investigation with the Douglas bag. He describes the apparatus and its adjustment and use during an experiment. He adds some notes about the analyses of the samples of air. He discusses how the figures of the analyses and the data from the bag are worked up. Some useful tables for obtaining the true from the apparent respiratory quotient and for obtaining volumes of dry air at 0° C. and 760 mm. Hg. are included.

(172) Food Value of Raw and Dry Tomatoes.

M. H. Givens and H. B. McClugage have studied the use of raw and dry tomatoes in the diet of guinea-pigs with the object of determining whether these substances possess anti-scorbutic properties (*Journ. Biological Chemistry*, February, 1919). The experiments recorded in this paper form portion of a large series planned to ascertain the anti-scorbutic powers of different foods and to determine the influence of various processes of preparation and of preservation upon these properties in the food. The desiccation of foods, especially vegetables, has been employed freely since the outbreak of war. The economic value of drying foods before transport is obvious, but enlightenment is needed as to the effects of drying foods upon their physiological value. While there are differences of opinion about the presence of a third or anti-scorbutic vitamine in foods, there is much evidence of the presence in certain foods of substances behaving like vitamines which afford protection against experimental scurvy in guinea-pigs. Little information of an accurate nature has been made available about the temperatures and conditions under which tomatoes are dried commercially. The authors have used an apparatus in which the temperature can be regulated to within 5° C., in which the volume of air is the same and in which the humidity can be ascertained. Two varieties of dried tomatoes have been used in the experiments. These are "low-dried" tomatoes obtained at temperatures from 35°C. to 40° C. and "high-dried" obtained from 55° C. and 60° C. Fresh and dried tomatoes have been added to the rations of young guinea-pigs fed upon a basal diet of soy bean, flour, milk, yeast, paper pulp, sodium chloride and calcium lactate. On this diet guinea-pigs regularly develope scurvy and succumb in 16 to 26 days unless curative measures are instituted. Ten grammes of raw tomato or 1 gm. of dried tomato have been added to the daily ration. The raw and dried tomatoes have been used to prevent scurvy and to cure it when it is present. Charts show that the addition of 10 gm. raw tomato maintains the growth of young guinea-pigs in a normal manner for 110 days. The same quantity of raw tomato serves to restore the health of animals in which symptoms of scurvy had appeared after several days on the basal diet. The dried tomatoes have also been effective in preventing the onset of scurvy, although no experiments have been performed on the power of dried tomatoes to cure the condition in guinea-pigs. The authors discuss some attempts to measure the amount of vitamine present in any food, but reach no definite conclusions.

(173) Blood Volume Afer Hæmorrhage.

O. H. Robertson and A. V. Bock (*Journ. Exper. Medicine*, February, 1919) have made a study of the blood volume in wounded soldiers. They have particularly examined the volume of the blood after hæmorrhage in its relations to other changes in the blood. They have investigated twenty-one soldiers in whom bleeding had occurred. Tests on the volume of the blood were made on fourteen persons and, with one or two exceptions, the tests were repeatedly performed. The patients were divided into two groups, those suffering from the late effects of primary hæmorrhage and those suffering from a secondary loss of blood. The volume of the blood was measured by the vital red method devised by Keith, Rowntree and Geraghty. The results were confirmed by estimations of the diminution in the percentage of hæmoglobin after the intravenous injection of a known quantity of 6% solution of gum acacia. The diminution in the volume of blood was very considerable, frequently amounting to close on 50% of the original volume. The amount of hæmoglobin was frequently even further reduced. The estimations of hæmoglobin showed that there is a definitely higher percentage of hæmoglobin on the capillary side of the circulation when the blood pressure is low. It was found that the diminished volume of the blood was regularly accompanied by a lowered blood pressure. Studies on the progressive changes in the volume of the blood following hæmorrhage showed that the organism did not restore the volume of the blood beyond a certain point, when a further increase would have brought the percentage of hæmoglobin by dilution to a very low figure. In such patients the further increase in the volume of the blood only occurs when the percentage of hæmoglobin had risen.

Naval and Military.

APPOINTMENTS.

The following appointments, etc., have been announced in the *Commonwealth of Australia Gazette*:—

Australian Imperial Force.

Second Military District.

Major E. W. Fairfax, Australian Army Medical Corps, to be Lieutenant-Colonel, and is appointed Consulting Physician, 5th Army, and to be temporary Colonel whilst so employed. Dated 18th November, 1918. (This cancels notification regarding this Officer which appeared in Executive Minute No. 157, promulgated in *Commonwealth of Australia Gazette*, No. 28/18, dated 27th February, 1919.)

Australian Military Forces.

GRANT OF HONORARY RANK.

The undermentioned, who have served in the Australian Imperial Force as commissioned officers, being appointed to the Reserve of Officers (temporarily), and being granted honorary rank equivalent to that held by them in the Australian Imperial Force:—

Officers who, on appointment for active service outside Australia, were not serving in the Australian Military Forces:—

Second Military District.

To be Honorary Captain—

A. D. Forbes. Dated 20th April, 1917.
H. V Baret. Dated 15th May, 1918.

Third Military District.

To be Honorary Captains—

S. O. Cowen. Dated 13th November, 1916.
A. W. Nankervis. Dated 25th October, 1916.

Fourth Military District.

To be Honorary Major—

E. A. Brummitt. Dated 24th August, 1917.

The undermentioned, who have served in the Australian Imperial Force as commissioned officers, shall have the rank held by them in the Australian Imperial Force confirmed as honorary rank in the Australian Military Forces as follows:—

Officers who, on appointment for active service outside Australia, were serving, and are now serving in the Australian Military Forces:—

Second Military District.

To be Honorary Major—

J. J. O'Keefe. Dated 17th January, 1918.
Captain R. I. Furber, D.S.O., Australian Army Medical Corps Reserve. Dated 27th April, 1917.

Fourth Military District.

To be Honorary Majors—

Captain F. Goldsmith, Australian Army Medical Corps. Dated 25th February, 1916.
Captain F. N. Le Messurier, Australian Army Medical Corps. Dated 14th November, 1916.
Captain J. S. Verco, Australian Army Medical Corps. Dated 14th November, 1916.
Captain A. V. Benson, Australian Army Medical Corps. Dated 1st July, 1918.

The undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:—

Ralph Whishaw, Esq., M.B. (1918, Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
Hubert Richard Joseph Harris, Esq., M.B. (1913, Univ. Sydney), Dunbar Street, Stockton.
Clarence James Middleton, L.R.C.P., Edin., 1917, L.R.C.S., Edin., 1917., L.F.P.S., Glasg., 1917, Garrison Hospital, Victoria Barracks, Sydney.
Howard Maxwell James, M.B., Ch.B. (1915, Univ Melbourne), "Bodington," Wentworth Falls.
James Arthur Hanrahan, M.B., B.S., B.A.O., R.U.I., 1909, 85 Dalhousie Street, Haberfield.

Correspondence.

BARIUM SULPHATE AND OPAQUE MEALS.

Sir,—During the past couple of months I have had many inquiries concerning barium sulphate and its administration for opaque meals.

The following information and details may be of interest to the profession.

Many years ago, when I pioneered the "opaque meal" at Sydney Hospital, bismuth salts only were used. Originally bismuth subnitrate was employed abroad, and it was soon discovered that many cases of nitrite poisoning resulted. This was then discarded and the bismuth carbonate was employed.

The early work at the hospital and in my private practice was carried on by using the carbonate, and then it was noticed by many observers that sundry digestive disturbances occasionally resulted.

The bismuth oxychoride was finally used and it always gave most satisfactory results, the only disadvantage being its cost.

Several years before the war, barium sulphate was being employed by many eminent radiographers abroad.

It was known that the ordinary barium sulphate contained many impurities and steps were taken to have these removed before its administration.

Many cases of barium sulphate poisoning were reported from all parts of the world, and in all these cases impurities were found in the barium used.

Before 1914 I used the pure barium sulphate of B.W. & Co. occasionally at both Sydney, Royal Prince Alfred and the Children's Hospitals and also in my private work.

While in England and Paris early in 1914 I found that bismuth oxychoride was generally employed for opaque meal work and the barium sulphate for opaque enemas.

During the war the price of bismuth increased considerably, but in spite of this it was still employed more frequently in England than the barium. Jordan always used it for his stomach work.

When in America in 1917 I was informed that barium sulphate was universally used. Cole, of New York, used it, so did Caldwell and Hirsh, of the same city, Arial George and Dodd, of Boston, Phaler, of Philadelphia, Case, of Battle Creek, Carman, of the Mayo Clinic, and hosts of others. The barium they used was always specially purified for them and the brand most frequently used was that of Brady, of Chicago.

I then decided on my return to employ pure barium sulphate in all my opaque work, seeing the excellent and safe results obtained throughout America.

There they use it by the ton, and with the specially prepared salt I do not know of any accident being recorded. I ordered 200 lbs. of pure barium sulphate for my private use, and on my return to Sydney in 1917 I found that barium and bismuth salts were difficult to procure. I managed to get a few bottles of pure barium sulphate of a foreign brand, after having purchased all I could from Burroughs Wellcome & Co. and my friend Dr. Clendinnen, of Melbourne, was kind enough to send me over several bottles of the salts, and then I found that I required more before my barium from America would arrive.

I then arranged with the chief dispenser at the Sydney Hospital to have some barium sulphate locally procured, specially purified and finely rolled by Mr. Radcliffe, the consulting analytical chemist. He specially prepared 20 lbs. of this, and it was most satisfactory. I used half of this and the Sydney Hospital the other half.

Still requiring more, I decided to try Adelaide, and I procured several large jars of pure barium sulphate from Bickford & Company. I instructed them that it was for internal administration and had to be pure. I found that it was also satisfactory. My only objection to all the locally obtained salts was their grittiness.

Eventually my barium arrived from Chicago, and since then to the present date I have used about 2,000 lbs. of this brand in hospital and private use.

In cases at the Children's Hospital I have given up to 170

grm. (six ounces) by the mouth and in adults I have frequently given up to 250 and 280 grm. (nine and ten ounces). The results have always been satisfactory. I see no reason why pure barium sulphate should not be universally employed for opaque meal work, but it must be pure. The medical man who employs it, should know that it must be pure. He should see that the pure barium sulphate for internal administration is ordered and also procured.

If thus prescribed he should be able to rely on its being correctly supplied.

Yours, etc.,

HERSCHEL HARRIS.

215 Macquarie Street, Sydney,
April 28, 1919.

PNEUMONIC INFLUENZA.

Sir,—In your issue of 26th inst. the following statement is made by one of the contributors to the discussion on pneumonic influenza which took place at the clinical evening held on April 11:—

"At the Walker Hospital precautions against infection through fleas were being adopted and it was noted that no contacts had contracted the disease."

I wish to state that no precautions have been taken against infection through fleas at this hospital. All our precautions are directed against "droplet" and "hand to mouth" infection and these precautions are:—

1. A close fitting mask, consisting of from four to eight thicknesses of gauze.
2. A hood of four layers of gauze, which covers the first mask and the whole head, neck and face, except the eyes.
3. Motor goggles.
4. Rubber gloves.
5. Gown.
6. Goloshes or sandshoes.
7. When any of the medical or nursing staff is attending a patient, the nose and mouth of the patient is also covered with gauze.

Yours, etc.,

PERCIVAL A. C. DAVENPORT,

Resident Medical Officer, Walker Emergency Hospital.
April 27, 1919.

Sir,—In reference to the anti-flea precautions taken at the Walker Hospital, I wish to state that Dr. Blaxland, one of the two honorary medical officers, gave me the information and permission to refer to it.

He told me that the floors of the hospital were daily swabbed over with sheep dip solution, and, as far as I know, there is no more effective way of dealing with fleas than this.

He also instituted for his patients a spray of eucalyptus and citronella, but says that this has not been carried out effectively.

While not an advocate of the flea transmission theory, he had in mind the danger of insect carriers in general.

Although not fully reported, I said at the meeting that the usual precautions against infection, such as masks, etc., were also taken, and, moreover, quoted Dr. Blaxland as saying that the Walker Hospital was always remarkably free from fleas, while mosquitoes were plentiful, patients and nurses being freely bitten.

Yours, etc.,

J. MORTON.

Sydney, May 5, 1919.

Sir,—The inductive method is very fashionable at the present time concerning the above disease. Let me be in the fashion. Induction is responsible for the name. Deduction says the visitation is not pneumonia. It also says it is not influenza. Pneumonia and influenza are diseases with which carriers are associated. "Pneumonic influenza" has revealed no carriers. Induction proclaims that diseases of high infectivity will spread rapidly and if not combated with effective preventive measures, will rapidly die out, leaving a toll of many victims. Those who survive are resistant and the visitation will not recur for a number of years. That is, there is no endemicity. Carriers spell endemicity. Induction and deduction find here a common ground of agreement. Therefore, the organisms found to be present in persons suffering from the disease and which are contained in the various vaccines devised to prevent or mitigate it, are not the causal agent. They are all characteristic of endemicity.

Plague and cholera are essentially epidemic. The causal agent is easily recognized. Small-pox, measles, scarlatina and whooping cough are epidemic diseases. Causal agent not yet isolated; they are epidemic, and carriers are only weakly represented in the two named last.

Whether epidemic, endemic, or both, the important point to remember is that the "previous case" is the source of the subsequent case. The cult of the "previous case" has long claimed my attention. In surgery, in midwifery, in epidemic and endemic diseases the cult of the "previous case" is worth following. If you are careful to avoid direct contact and convection of excretions, you will not contract the disease in question or pass it on to others.

The mask, therefore, is certainly called for (by induction) and to be worn by the patient as well as the examiner at every interview.

I have always requested patients suffering from respiratory diseases to place a handkerchief before their faces when examining them and also when anyone (the nurse, for instance) is talking and attending to them. Pus I will not touch. My rubber glove bill is enormous. Deduction is outed. Induction cries out: "Make way for the filter passer!"

Yours, etc.,

A. C. F. HALFORD.

"Turrawan," Clayfield, Queensland.
April 29, 1919.

HYGIENE *VERSUS* INFLUENZA.

Sir,—I trust you will find room in your columns for this letter as well as the enclosed 'Flu Barometer.

I would suggest that isolation having now been practically knocked out by numbers, natural resistance is the only remaining defence that has, up to the present, been proven to be effective against the pandemic, and it thus follows that anything that lowers natural resistance is unwise and unjustifiable because it is harmful.

Can any of your readers suggest a better explanation than that decreasing natural resistance is the evil influence causing the alarming increase in the death rate shown in the accompanying barometer?

Yours, etc.,

A. G. HODGSON.

157 Macquarie Street, Sydney,
April 30, 1919.

'Flu Barometer: Comparative Statistics.

Metropolitan Hospital Cases.

Week Ending	New Cases.	Deaths.	Death Rate.
April 5	867	110	12.7%
April 12	1,045	175	16.7%
April 19	1,002	230	22.9%
April 26	876	151	17.2%*

* Improvement probably due to four days' mask lifting at Easter.

MARITIME QUARANTINE IN INFLUEUZA.

Sir,—May I ask Dr. W. G. Armstrong the following questions:—

(*a*) Was "the fine exposition of the capabilities of maritime quarantine on the part of the Commonwealth authorities" confined to New South Wales?

(*b*) If it was not, how did Victoria become infected? Was it by grace of God, or original sin, or was the "exposition" less "fine" in Victoria than New South Wales? A chain is only as strong as its weakest link, and if maritme quarantine allowed Victoria to become infected, it was quite useless in New South Wales.

(*c*) If "one is reluctantly forced to the opinion that no conceivable public health measures are likely to arrest the spread of the epidemic in Sydney," what is the use of maritime quarantine at all?

Yours, etc.,

VICTORIAN.

April 29, 1919.

Books Received.

DISEASES OF THE SKIN, by James H. Sequeira, M.D., F.R.C.P., F.R.C.S.; Third Edition; 1919. London: J. & A. Churchill; Royal 8vo., pp. 644, with 52 plates in colour and 257 figures in the text. Price, 36s. net.

CHRONIC TRAUMATIC OSTEOMYELITIS, its Pathology and Treatment, by J. Renfrew White, M.B., F.R.C.S.; 1919. London: H. K. Lewis & Company, Limited; Demy 8vo., pp. 144, with 24 plates and 13 diagrams. Price, 12s. 6d. net.

TRAITEMENT DES PSYCHONEVROSES DE GUERRE, par G. Roussy, J. Boisseau, M. d'Oelsnitz; 1918. Paris: Masson et Cie, Crown 8vo., pp. 191, illustrated. Price, 4 fr.

Medical Appointments.

Dr. F. J. Burns (B.M.A.) has been appointed Government Medical Officer at Ganmain, New South Wales.

The appointment of Dr. H. A. E. Noble (B.M.A.) as Government Medical Officer at Warialda and of Dr. Silvio Monti at Broadwater, New South Wales, is announced.

Dr. H. L. Kesteven having resigned, Dr. J. Maye (B.M.A.) has been appointed Quarantine Officer at Gladstone, Queensland.

Dr. J. M. Tighe has been appointed Quarantine Officer at Strahan, Tasmania.

The appointment of Dr. J. Colvin Storey, O.B.E. (B.M.A.), as an Honorary Assistant Surgeon at the Coast Hospital, New South Wales, is announced.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvii.

Bundaberg General Hospital, Queensland: Medical Officer.

University of Otago, Dunedin, New Zealand: (*a*) Professor of Systematic Medicine, (*b*) Professor of Clinical Medicine and Therapeutics, (*c*) Lecturer on Clinical Medicine.

Alfred Hospital: Acting Honorary Physician to Out-Patients.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec. 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United Friendly Societies' Dispensary. Canterbury United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Friendly Society Lodges at Lithgow. Friendly Society Lodges at Parramatta, Auburn and Lidcombe. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

May 13.—N.S.W. Branch, B.M.A., Ethics Committee.
May 15.—Vic. Branch, B.M.A., Council; Election of Representative on Representative Body.
May 20.—Tas. Branch, B.M.A., Council.
May 20.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
May 20.—Illawarra Suburbs Med. Assoc. (N.S.W.).
May 21.—W. Aust. Branch, B.M.A., Council and Branch.
May 23.—Q. Branch, B.M.A., Council and Branch.
May 27.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
May 28.—Vic. Branch, B.M.A., Council.
May 29.—S. Aust. Branch, B.M.A.
May 30.—N.S.W. Branch, B.M.A.
June 3.—Tas Branch, B.M.A., Branch and Council.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney.

The Secretary of the Victorian Branch is endeavouring to secure copies of the issues of the *British Medical Journal* of the following dates, to complete a file for one of the members. We shall be grateful to any of our readers who has a spare copy of any of the numbers sought, if he will offer them to the Secretary of the Branch:—

1915: April 3 and 10; July 10, 17, 24, 31; August 7 and 21.
1916: July 8. August 5 and 12. November 18.
1918: Title Page and Index, Volume I. and Volume II..